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Weedless Lawns

and
Golf Courses

O.M. SCOTT & SONS CO.
MARYSVILLE
OHIO

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Weedless Lawns and Golf Courses



THE information in this booklet applies to the golf course, as well as to the lawn. The golf course needs exactly the same sort of preparation as the lawn except that larger tools, such as the plow, disc, spike tooth harrow, drag, etc. are used in preparing the ground.

There is no great secret about golf course mixtures. Nearly everyone knows the grasses that are the most desirable. The thing is to sow seed that is free from weed seeds, dead and immature grains — the kind this booklet tells about.

A given grass will not do well in all sections of this country; certain varieties do better in certain localities, and it is unreasonable for English seed concerns to claim that by simply sowing seed from Europe, the turf can be made as satisfactory in color and texture as those across the water. Some of the very grasses that do best there are unsuitable here where we have too much sunshine, long periods of drought and severe winters. Different grasses must be used in this country if we hope to produce the best and most lasting turfs.

Weeds

WEEDS are the yeggmen of plant life, the outcasts of the society of growing things, stealing and appropriating to themselves the fertility, moisture, sunshine, and room to thrive that are the birthright of what we sow.

Assuming that their might affords them the right to dwell where they list, they elbow everything else out of the way, and, if let alone, would soon establish their own undesirable community where it was planned only beautiful grass should grow.

Particularly are they active in newly made lawns, frequently making it necessary to do all over again the work of first preparation. Always unsightly, they mar the effect of an otherwise faultless lawn. To eradicate them, once they are in residence, is arduous and expensive.

The ideal lawn is the Oriental or Royal Wilton of the outdoors, and if we would have it as delightful to our eyes as its cherished indoor prototype, there must be no weeds to impair its beauty.

In the making of a lawn no other problem exceeds that of the weed in vital importance. One way of speaking, all living things except animals may be called plants. Nature recognizes no difference between weeds and useful plants; man, judging their effect upon his interests, distinguishes weeds as "plants out of place."

Weeds mean wasted labor and constant expense.

Undesirable Aliens

WEEDS increase the effect of drouth by taking up water from the soil and wasting it by evaporation.

Weeds are hardier and more prolific than other plants, for valuable plants have been bred to such a high point that they have less resistance than weeds that have had to fight their own battles for ages, conquering drouth, man and the elements, and continuing their travels around the globe.

Weeds which a short time ago were unknown in American lawns have become prominent pests. Most of these objectionable immigrants were brought from Europe in grass seed and, as many of the grasses are grown for seed only in Europe, it can be seen that great care must be exercised in the purchase of lawn seed or trouble is quite likely to be sown for years to come.

Weeds know how to fight and to propagate themselves. Nature equips the perennials with deep and spreading roots that resist the most severe weather. Annuals produce thousands of seeds each year. The seeds of some weeds are fitted with parachutes, sails, grappling hooks and entrenching tools and some shoot broadcast like bursting shells when the pod is touched. Thus, it can be seen, that when a crop of weeds is maintained on the lawn the neighbor's lawn is quite likely to be damaged by them.

Survival of the Strong

NATURE abhors waste spaces. If bare spots are left on the lawn, she immediately covers them with weeds, using her only means of preserving the valuable elements in the soil that would otherwise leach out. All bare spots as they show themselves should be sown with good seed, especially on a new lawn, for every weed does harm by smothering out grass and attracting insects—mosquitoes, ants, etc.

A recent bulletin issued by the Department of Agriculture begins with this statement: "In a sense, farming might be called a warfare against weeds. . . . So powerful are weed enemies in reducing crop yields, which at the same time multiply labor, that the farmer should at every turn strengthen his position against them."

This bulletin like everything else that has ever been published on this subject, closes with the admonition that to be rid of weeds pure seed must be sown. Exactly the same thing applies to the lawn, which indeed is but a small farm. The farmer, however, can practice rotation of crops and cultivation as a means of keeping down the weeds. Obviously this is impossible in the lawn, so it is even more important that pure seed of strong vitality should be sown. If weedy seed is used, the resulting weak plants are overcome by the weeds sown with the seed, together with those already in the ground.

Eternal Vigilance

GOOD seed is often unthinkingly charged with a growth of weeds. This growth, however, may come solely from viable weed seeds which have been in the ground for many years. On another page we explain how to get rid of these seeds. Weeds sown with the lawn seed will germinate at the same time. They cause endless trouble and can be eradicated only by pulling.

Eternal vigilance is the price of a good lawn free from weeds, except extreme care be used in the selection of the seed.

Many a farmer harvests half a crop of hay because he is careless in the purchase of his seed. Weed seed cannot make a profitable farm crop and weedy lawn seed cannot make a successful lawn.

While it may not be possible to have a lawn entirely free from weeds, yet by following certain simple instructions weeds may be reduced to such an extent as to be negligible.

The following pages set forth the gospel of good sowing which for some years, we have been successfully preaching. They detail for you an effective plan of campaign against the Philistines already encamped in your dooryard, identifying and picturing the most dangerous of your enemies. They show you also what we are doing to insure a clean lawn from your next sowing.

Surely it is less expensive to sow Scott's Lawn Seed and thus avoid sowing and propagating weeds than to spend days of labor in their destruction.

Dead and Immature Grains

IN SELECTING lawn seed one needs to guard against not only the presence of weeds but also the presence of grains that will not germinate or, at best will make only weak plants.

A large amount of immature grains in lawn seed is equivalent to adulterating and an unsatisfactory and patchy lawn can be the only result.

Seed usually contains dead and immature grains for the reason that it has not been thoroughly cleaned; quite often, however, the germinating power of the light-weight seeds of which lawn mixtures are composed is destroyed in the process of curing, though the grains retain their normal size and appearance.

Experiment Stations have found that it is a common thing for clover seed costing \$10.00 per bushel to really cost the purchaser 25% to 50% more, through the presence of waste matter. It is easier to pay good money for waste matter in lawn seed than in farm seed. Dead grains and those burnt in curing do not grow. Buying them means proportionate increase in the cost. One cannot afford to buy such stuff; much less to sow it.

A seed is not a seed unless it will germinate.

Under unfavorable conditions you may get a poor lawn from good seed, but a good lawn never did result from sowing poor seed. When the purchaser accepts seed that he knows contains

immature and dead grains, he should realize that he is losing money, for an undesirable lawn is sure to follow. The actual proportion of weeds and worthless seeds must be estimated before one can know the actual cost of seed. How to make this estimate is explained in "How to Know Good Seed."

When you buy Scott's Lawn Seed you will be absolutely sure that you are paying only for large, well matured grains that will grow.

Getting Rid of Weeds

WEEDS may be classified according to the length of time they live as, annuals, biennials and perennials.

Lawn owners are particularly interested in the annuals and perennials, or seed plants and root plants. The annuals growing from seed produce flowers, bear seed and die all within a year. Perennials propagate themselves both by roots which stay in the ground for years and by their seeds. It is important to know under which head the different weeds come and their habits in order to remove them from the lawn and keep them out. Annuals should be prevented from seeding and perennials from forming new leaves, roots and underground stems. Any weed may be eradicated if the nature of its growth is understood.

Plants take in most of their food through their leaves. The perennials, such as dandelion and plantain store some of this food in their large

fleshy root stocks. The first growth in the spring, particularly the flowering stems, draws on this supply of nourishment. The plants are then in their weakest condition and should be attacked when in full bloom before the seed has time to mature and the plant has begun to replenish its food supply.

Some weeds will produce a million seeds in one year, so one of the most important things in getting rid of weeds is to prevent their seeding. Under the different weed illustrations we give the best methods for disposing of them.

However, the important thing to consider is that by keeping grass in you keep weeds out. Mow frequently and use fertilizer in the spring and well rotted manure in the fall.

By sowing Scott's Lawn Seed or any other seed known to be pure and to contain strong well developed grains, much of the trouble of destroying weeds may be avoided.

Preparation of Ground

THE two important considerations in the preparation of a new lawn are the quality of the soil and the quality of the seed. Good soil is necessary because no seed will make a satisfactory lawn unless the soil will furnish moisture and heat, and allow the circulation of air. Nearly all soils, reasonably fertile, contain the essential plant foods, nitrogen, potassium and phosphorus. These are insoluble, and are not released unless a sufficient amount of humus (decayed vegetable matter) is in the soil, so that moisture

may be retained and chemical action take place to release them. Soil conditions should be such that the lawn may take care of itself whether there is too much water or too little. Drainage removes the surplus water and humus retains moisture for use during the dry time. Drainage is to most soils like fresh air to a poorly ventilated room.

Let the Roots Breathe

THE oxygen in the fresh air, penetrates the soil, and is as necessary to plant growth as it is to human beings. If soil is not naturally well drained tile should be used.

On account of building operations the ground about a house is apt to be in an unfavorable condition for the making of a lawn. All waste matter such as stones, large clods, etc., should be removed and the ground carefully leveled. This can easily be done by driving pegs at intervals and using a level and straight edge.

Top soil should be added to a depth of three to six inches. If the subsoil is very heavy clay, the surface soil should be deeper. Soil obtained from a cultivated field is best, for it should be full of humus and contain less weeds. Soil brought from another place should be spread evenly over the entire surface; otherwise the lawn may present a patchy appearance. Certain grasses are congenial to certain soils, and different shades of green may result. This condition is often discernible on even the oldest lawns. If there already is a rich top soil, it may be removed, and replaced after the subsoil has been leveled.

The top soil should be raked and rolled until the upper inch, in which the young plant will get its start, is as fine as ashes. As the grass grows, long roots shoot out, so conditions below this depth should be suitable for their development. Have all the top soil mellow, but made firm by rolling. Rolling both ways reveals inequalities of the surface easily adjusted by the use of the rake. Hollows are likely to hold the water and either prevent germination entirely, drown out the young plants, or cause the mature grass to be killed by freezing and thawing in the winter. The rolling makes a firm seed bed and allows the soil fluids to be brought up by capillary attraction. If there is no capillary attraction plant foods are carried down by the rains and cannot be brought back to the surface.

Frequent raking ventilates and warms the soil, and, more important still, kills the young weeds as they sprout. It should be kept in mind that all soils are naturally full of the seeds of indigenous weeds. If some time is taken for preparation, and the raking is done as the weeds come up, conditions for a good growth of grass will be much improved, as in a short time all surface weeds will be killed. Weeds that are still deeper in the soil will take a longer time to germinate than the grass and will be choked out, providing that seed composed of strong, quick germinating grains has been used.

The very fine soil acts as a blanket for the coarser soil beneath, prevents the escape of moisture through cracks, and assures quick germination.

Grass Grows *Down* as Well as *Up*

WHEN building for a permanent lawn, too much trouble cannot be taken to make conditions just right, both above and below the surface, for grass must grow down as well as up. Plenty of plant food means that the grass will have a vigorous root system, making it able to withstand the drought and heat of late summer and the alternate freezing and thawing during the winter. It will be ready to make a quick and satisfying growth in the spring.

If natural top soil cannot be obtained, it must be made. It is imperative that a goodly amount of well rotted stable manure be supplied, as fresh manure often contains a large number of weed seeds.

A very tenacious clayey soil may be greatly improved by adding sand or sifted coal ashes to the depth of about one inch, which breaks up the clay, and permits the circulation of water. Lime makes clay ground more friable, and is an important addition to almost any soil, as it neutralizes the acids, which are caused by decomposing organic matter and the loss of lime and alkali salts in drainage water. It should be applied at the rate of ten pounds to one hundred square feet. Where soil is very poor, in addition to the manure, or top soil, it is wise to add five pounds of bone meal per one hundred square feet. Sometimes it is impossible to obtain good stable manure, or top soil, and while nothing will take its place for

permanency, five pounds of sheep manure applied to each one hundred square feet will be of great benefit.

Sandy soils require the introduction of an extra amount of stable manure, or green manure. Several inches of rich top soil should also be added with bone meal and lime.

More frequent watering, of course, is necessary, as sandy soil has little water holding power.

The removing of a nurse crop like oats or rye often has a bad effect on the young grass, and in a dry season it absorbs the moisture badly needed by the grass. Therefore, we do not recommend the sowing of anything but lawn seed.

Sowing

“IN procuring seed for establishing a lawn, too great care can not be exercised. Pure seed of high germination is of great importance in securing a good stand of grass. Pure seed is the keynote to a clean lawn, providing the work of preparing the land has been effectively done. Too much cannot be said in favor of securing pure seed.” (Bulletin 494 “Lawn Soils and Lawns,” issued by the Department of Agriculture.)

Scott's Lawn Seed is PURE SEED.

If the ground is carefully prepared and Scott's Seed is sowed there is but little chance of failure, so little that we willingly assume the risk of the seed growing. See our guarantee on page 27.

Lawn seed should be sowed on a calm day. Sowing can be more uniformly done if the seed is

divided into two equal parts, sowing one part north and south and the other part east and west, with the hand rather close to the ground. It is not a bad plan to mark off the lawn in four or five foot strips, sowing one at a time. A thick stand of grass chokes out the weeds. A thin stand gives them an opportunity to establish themselves, so that it hardly pays to sow sparingly. About 100 pounds per acre should be used on a large lawn. On small plots where there is shade from house and trees one pound to every 15 x 15 feet is not too much. Seed may be sowed at any time, except during the winter. Many prefer autumn sowing, but it is usually more convenient to sow in the spring. After sowing, the surface should be carefully and lightly raked, that the seed may be slightly covered. Next use the roller. It is well to water freely before rolling, provided the water is put on with a fine spray and the surface is allowed to dry so that the soil will not stick to the roller.

After going to considerable expense in the preparation of the ground, it surely would be unwise to risk the sowing of poor seed. Scott's Seed is guaranteed.

Mowing

WHEN the new grass is two or three inches tall, it should have its first clipping, with the mower blade set high. Grass should never be allowed to grow much taller than this as the vitality is taken from the roots and their growth is retarded, preventing the formation of a thick sod. It is a mistake to let grass go to seed; nothing can

be more harmful to the lawn. Mowing should be done regularly, but not so often in dry, hot weather, as the roots require the top growth for protection. It is unnecessary to remove the cut grass unless it has been allowed to grow luxuriantly, except during extremely wet weather. After the first mowing a light roller may be used to good advantage. There is no better practice than frequent rollings, especially after rains.

Watering

CONSTANT watering causes soil to become sour, and prevents chemical action. During normal weather very little sprinkling is necessary. Frequent light sprinkling brings the roots to the surface for the moisture, where they are readily killed by the hot sun. Nature's plan of a thorough soaking at intervals is better. One good soaking a week is usually sufficient. This causes the roots to go down deep, as they should. The sub-soil rather than the top soil should be full of water.

Treating an Old Lawn

DIG out the weeds, use the dandelion killer and scratch the surface vigorously with a sharp rake. Grass will not be injured by hard raking. If necessary spade up the bare spots and prepare them as for a new lawn. Use sifted ashes or sand on heavy soils. Rake in bone meal, sheep manure, or well rotted stable manure. Lime, too, will be found of great benefit in remaking an old lawn, except where white clover grows vigorously. If at the same time grass

grows sparingly a lack of plant food is indicated. for clover must have lime but gathers nitrogen from the the air, grasses do not have this ability. Use fertilizer. Here it is especially important to use high germinating seed. Rake in and roll.

All lawns are improved by the use of well rotted manure after the grass has become dormant in the fall. If put on too early it is likely to stimulate the growth and cause the grass to be easily injured during the winter. In the spring or at any time during the summer sheep manure or bone meal may be applied at the rate of five pounds to every one hundred square feet. Occasional light seeding is necessary because many plants die out. After the frost is out of the ground a careful raking with an application of manure and seed will be found beneficial. If the lawn is in very bad condition, usually it is necessary to make it over again.

Big Rapids, Mich.

"The seed I used, which I received from you was very satisfactory, and on very poor soil I have received a satisfactory catch."

R. J. PARR.

Ferris Institute.

"Seed arrived in good shape and I'm enclosing check for same.

I thank you for your promptness, also the most excellent seed. Please ship by express 400 pounds of Lawn Grass seed. Bill to Fairmont State Normal School."

E. L. LIVELY.

The Putting Green

THE Putting Green must be dry and have a dense, close-knit, springy turf.

Drainage should be carefully considered and in many cases the subsoil is of such character that an engineer should be consulted. Specific directions cannot be given here. Little or no tiling is needed with a loose, open subsoil. The texture of one that is heavy and sticky may be improved by the addition of ashes.

To insure a turf that will stand continuous trampling, the top soil must be thoroughly firmed and plenty of plant food must be supplied. The grass will grow too rank if the soil is as deep and rich as for a lawn. The grasses used should be fine leaved, low growing, and, above all things free from weeds. The more vigorous they are the sooner a satisfactory turf is made. A strong, viable seed, under right conditions produces a root system that can make use of enough plant food to hasten growth and make a strong, drought-, heat- and cold-resisting plant.

Do not clip too closely during hot weather.

Except early in the spring a light, rather than a heavy roller should be used.

Sand applied to a depth of $\frac{1}{8}$ to $\frac{1}{4}$ inch in the fall is helpful on most soils.

Fair Greens

THE same general methods employed in the preparation of lawns are used for making fair greens. Here it is especially important to sow

pure seed free from weeds for the broad leaves of weeds are always slippery and make a poor playing surface. As all our mixtures are practically free from seeds of weeds, they are especially desirable for Golf Courses.

Shady Places

EXPERIMENTS have shown that an elm tree in the midst of paved streets and cement sidewalks gave off to the air 260 barrels of water each day in summer. As this water was drawn by means of the roots from a distance, surrounding lawns were robbed of moisture and fertility. This characteristic of trees is often more injurious to grass than the shade from them, and proves that the soil under trees must be constantly fed with fertilizer or manure. Drainage is also important as the charged water from the rain washing the leaves and bark is held in the ground for a long time and has an injurious effect unless immediately carried away. Seed should be sowed frequently.

Shady Place Mixtures

AMIXTURE for shady places must be composed of the grasses that respond to these particular conditions. These seeds are more expensive than those for sunny places. We use great care with these mixtures, but cannot guarantee them.

“How to Know Good Seed”

ONE need not know all about Lawn Seed to quickly see which is the most free from weed seeds and waste matter, and which shows the largest percentage of germination.

Spread equal quantities from the separate samples received on pieces of white paper.

Scrape to one side waste matter—weeds, chaff, etc.

Compare the waste from the different samples.

In a mixture of seeds it is not easy to identify all the weed seeds, but it may be assumed that any seeds of unusual shape are the seeds of weeds.

Dock and Sorrel are triangular like a beech nut; color brown. (Bad weeds but not illustrated.)

Buckhorn for all the world like a coffee grain; brown.

Broad leaf plantain, flat and irregular; black.

Crab grass, oval, flat on one side; greenish brown.

Chick weed, round, flat, very small; reddish brown.

Dandelion, oval, one end pointed, rough.

Some weed seeds like Chick Weed, Dandelion, Moneywort, Ground Ivy, etc., are so small that a magnifying glass will be helpful.

To make a germination test, thoroughly moisten two blotters; place both in a plate with seed between them. Cover with another plate, upside down, to prevent evaporation. Keep the

SCOTT'S LAWN SEED

blotters moist, but not in water, and as near the temperature of 70 degrees as possible. Some seeds will germinate quickly, while some require nearly two weeks for germination.

Decision as to which seed to accept should be based upon the following points:

Least number of Weed seeds.

Least number of Blasted grains.

Greatest strength of Germination.

The absence of an adulterant (very light chaffy seed).

Inasmuch as very little money could be saved in sowing poor seed, why take any chances? It is always safe to sow Scott's Lawn Seed, and the price is no higher than for medium grade seed.

Dresden, Tenn.

"The seed you sent me last August has proven entirely satisfactory and I now have a terrace that is the envy of all. This terrace is right on the main road between this town and another, and it is admired by every one. The recent very cold spell however, affected it for a few days, but the late warm rains have brought it out and it looks as pretty as a sixteen-year-old girl."

J. L. HOLBROOK.

Granville, Ohio.

"The Blue Grass seed was the best we have had for years. The Shady Mixture was just what we needed and gave us a good heavy sod before the hot summer sun got at it. It is coming on fine this spring."

DENNISON UNIVERSITY.



Crab Grass

THIS annual grows so closely to the ground that it is usually untouched by the mower. Wherever the stems strike the ground a new root starts. The seeds germinate in June or July, the plants soon crowding out much of the grass if the season is extra wet and the grass plants weak. At the first cold weather the leaves of Crab Grass take on a rusty appearance. The first frost kills it entirely, leaving an unsightly lawn. There are 1,088,000 crab grass seeds in a pound, so even though the old plants are dead,

there are sure to be plenty of new ones the next season unless care has been taken to remove the seed stems before the seed has formed.

To remove them, when the crab grass begins to spread, take a sharp tooth rake and yank up the close lying stems so as to bring them within reach of the mower. Set the blade as low as possible. Repeat the raking and mowing until you are satisfied that the work has been thoroughly done. Close mowing without raking simply makes matters worse. Very young plants can be pulled by hand, but this is a tiresome job. Sow grass seed. Use fertilizer or rotted stable manure to thicken the lawn grass.

Moss

THE presence of Moss indicates either a poor, exhausted soil, incapable of supporting a good crop of grass, or the lack of proper drainage, which causes the soil to become sour. A heavy application of lime well raked in will soon destroy moss, but it will return unless the soil is enriched, or drained, or both.



Dandelion

THE commonest and most difficult perennial to kill. Cutting, even below the surface, increases rather than decreases the number, as this often causes the crown to be split, and several new plants to spring from the old roots. If a tablespoonful of salt or gasoline is applied where the root is cut off the dandelion will die. As this method may be burdensome where the plants are numerous, we recommend the Dandelion Killer illustrated on the next page. On larger badly infested lawns con-

siderable success has been derived from spraying a solution of iron sulphate, two pounds to a gallon of water, at the rate of one gallon to six hundred square feet. This should be applied several times during the summer. The spray adheres to the broad leaved weeds, but runs off the narrow leaved grasses. It should be kept in mind that spudding by itself means that two dandelions will grow where one grew before. A very small part of the root will cause a new plant to start.

Dandelion Killer

THE use of this Killer saves much back breaking work. The tube is filled with gasoline, the plunger being applied to the heart of the weed. One application of a tablespoonful of gasoline kills most perennials. Kerosene may be used, but with more care, as surrounding grass might be injured.

It is surprising the amount of weeds (any kind) that can be killed in five minutes with a nickel's worth of gasoline. Price \$1.50, postage paid.



Dayton, Ohio.

"Your seed was very satisfactory. Will send you order later."

THE JOHN R. BUCK CO.

Landscape Gardeners.

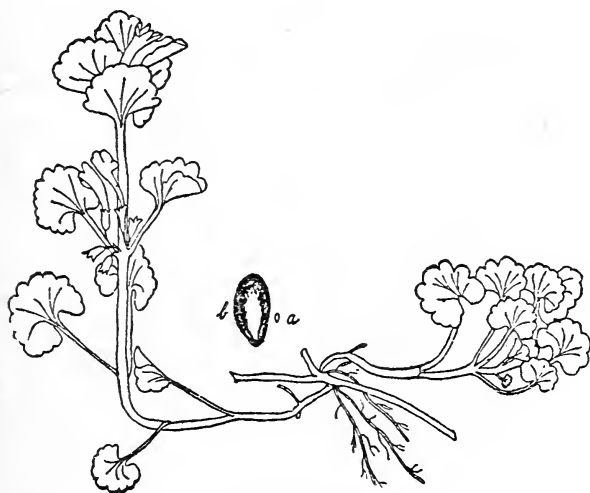


Moneywort

THIS perennial is often miscalled Wandering Jew. It propagates itself both by seeds and by the joints of the stems taking root where they touch the ground. It is a persistent grower, seeding early and throughout the season. When once it has become established it is an endless undertaking to remove it by hand. Frequent applications of hot brine will do much to subdue Moneywort. Small patches may be killed by covering with tarred paper or boards for several weeks. The most effective way, however, of getting rid of this tenacious plant is to improve soil conditions. Use plenty of lime, raking it thoroughly into the soil. A few days later, fertilize, or apply rotted stable manure. If possible to put in drain tile no further trouble will be experienced.

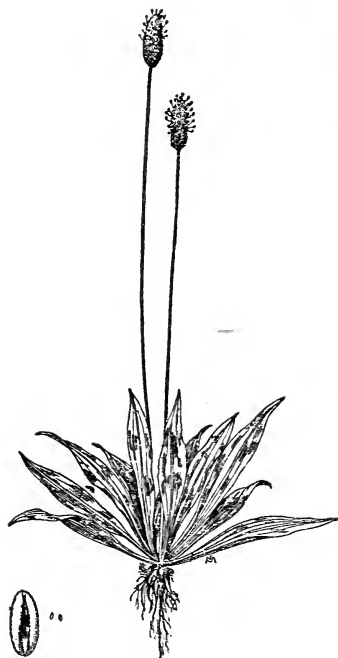
Chick Weed

CHICK WEED is similar in appearance and requires the same treatment. The flowers of Chick Weed are white and star shaped. Moneywort has conspicuous yellow flowers.



Ground Ivy

A VERY pretty plant, but out of place in the lawn. A perennial of the same creeping habits as Moneywort and Chick Weed, but even more aggressive. Use the same methods in destroying. Often it has been found necessary to spade up and cultivate spaces that have become entirely occupied with Ground Ivy. Flowers reddish blue.



Buckhorn Plantain

THIS perennial which is becoming very common in lawns can be destroyed by the use of the Dandelion Killer, or by spudding out. It is necessary to remove only the main root, which is not deep.

Buckhorn is more at home on light poor soils, so one of the best ways of keeping it out is to enrich the ground.



Broad Leaf Plantain

CALLED White Man's Foot Steps by the Indians because unknown until introduced by settlers. Unlike the Buckhorn Plantain, it is more annoying on rich land. The same methods should be used in its destruction. A good system in removing Plantain as well as other weeds is to mark off strips about three feet in width, taking all the weeds as you go. After removing, lawn seed should be sown. Use the killer.

SCOTT'S LAWN SEED

IN THE foregoing pages we have told what to avoid in purchasing Lawn Seed; that is, weed seeds, blasted grains and other waste matter.

We believe that Scott's Lawn Seed contains less of the above than any other mixture and for this reason will go at least 25% farther than others. As there are several thousand bushels of ordinary seed harvested where one bushel is produced that can be cleaned free from weed seeds and blasted grains, it is a very easy matter to procure supplies of cheap seed, but it takes considerable experience in selection and cleaning to be able to furnish Lawn Seed that can be guaranteed.

However, we take such exacting care in the selection, cleaning and grading of our seed and we are so thorough in our tests to prove the growing power of our seeds that we assume full responsibility for every shipment that goes out from our house. A trial sowing will convince you that Scott's Lawn Seed is all we claim for it.

GUARANTEE

CONSIDERING unfavorable weather and improper soil preparation, it is not customary to warrant seed to grow. However, many years of satisfactory experience with our seed convinces us that it will grow if given a fair chance; we will therefore, replace without charge any seed that does not GROW. This guarantee, of course, does not apply to seed sowed in places that are badly shaded (see Shady Places).

SCOTT'S LAWN SEED

New York City.

Mr. Walter J. Travis,

Garden City, Long Island, N. Y.

Dear Sir:—I learn that you are interested in the construction of a new golf course at Garden City. I am interested in a company who own some property near Garden City, besides residing on Long Island; I feel the improvements of this character must help the island.

My object in writing you is to suggest if you have not already purchased seed for your new course, that you investigate the seed furnished by O. M. Scott & Sons Co. of Marysville, Ohio. Our company has been buying seed from them for several years and we found it much superior to any other seed we have tried.

As a member of the Board of Governors of the Brentwood Golf Club I recommended the seed to that club for trial last spring and demonstrated its value. Notwithstanding the long drought during the summer months, we had a remarkably fair greens the entire summer, though the seed was not sown until May. I would be glad to have you come to Brentwood and examine the turf that we have secured from the use of this seed in a remarkably short period. I think a test by germinating the Scott Seed in competition with others will satisfy you that it is exceptionally good seed and absolutely free from weed or any other objectionable seed.

I have no interest whatever in the Scott Company, but feel their seed is entitled to this endorsement.

Yours very truly,

E. H. McWHORTER.

Philadelphia, Pa.

"The lawn grass seed which I purchased from you last year was very satisfactory; it seemed to produce a better grade of grass than I have been able to get from other grass seed in previous years. I can use the same quantity again this year to good advantage to fill up bare spots in the lawn. How soon would it be well to sow this seed?"

JAMES G. RICE

*Now 'tis the Spring, and
weeds are shallow-rooted;
Suffer them now, and
they'll o'ergrow the garden
And choke the herbs
for want of husbandry.*

—Shakespeare

Scott, J. M. & Son Co

922

*Now 'tis the Spring, and
weeds are shallow-rooted;
Suffer them now, and
they'll o'ergrow the garden
And choke the herbs
for want of husbandry.*

—Shakespeare

SCOTT'S BACTERIA

Scott's Cultures are prepared by a bacteriologist who has devoted many years to the development of the most efficient material for carrying the bacteria for the inoculation of legumes. There are many objections to gelatin as well as to soil and other dry media. These objections are entirely overcome when sand is used. For years we have been trying to find an inoculating material that would satisfy us as being thoroughly reliable. We now have it, and we guarantee it absolutely.

O. M. SCOTT & SONS CO., Marysville, Ohio

1. What is a legume? A legume is a plant which is characterized among other things, by a high protein content. Common examples are peas, beans, vetches, clovers, alfalfa, soy beans and cowpeas.

2. If they are high in protein they must use a great deal of nitrogen? Yes, they do utilize a great deal of nitrogen and this would be an objection to growing legumes but under certain conditions they can get nitrogen from the air.

3. Under what conditions is nitrogen obtained from the air? When there are nodules on the roots of the plants.

4. What are these nodules? They are tubercle-like swellings in the roots. On clovers they are rather small. On other legumes they may be larger.

5. Do agricultural plants, other than legumes have these nodules? No.

6. What causes these nodules? The entrance of certain bacteria into the roots of the legume.

7. What are these legume bacteria? They are minute plants so small that they can be seen only with a microscope of very high power.

8. How are these nodules produced? When the bacteria get into the roots, the bacteria reproduce, millions of them are formed and the roots form the nodular swellings as a result of the presence of these bacteria.

9. What do these bacteria do? They obtain nitrogen from the air and in some way pass it on to the legume plant.

10. How much nitrogen is obtained from the air by an acre crop of legumes? About 100 pounds or more.

11. What is the money value of this? From \$16.00 to \$30.00 depending on the market price of nitrogen.

12. Do legumes always have nodules? No.

13. Where does the legume get its nitrogen when it does not have nodules? From the soil, as does any other crop.

14. When are nodules produced?
ONLY WHEN THE PROPER BACTERIA ARE PRESENT.

15. How is it possible to know if the proper bacteria are present in the soil? By growing the legume and carefully digging up plants, examine for nodules.

16. How can one insure the presence of the proper bacteria? By inoculation.

17. What is meant by inoculation? This means the bringing together of the legume plant and bacteria which cause nodule production.

18. Are all legume bacteria the same? No. For agricultural plants we recognize at least six groups.

19. What are these groups? (1) bean, (2) cowpeas, (3) soybeans, (4) alfalfa and sweet clover, (5) peas (garden, field and sweet) and vetch, (6) clovers (red, white, crimson and alsike.)

20. Will a culture for alfalfa inoculate soy beans? No. The bacteria belong to a different group.

21. What is a pure culture of legume bacteria? A pure culture is a crop of a single legume bacterium, grown to the exclusion of all other bacteria.

22. How are these prepared? Bacteriologists obtain the different bacteria from nodules taken from this particular legume and cause them to reproduce in pure cultures in the laboratory.

23. What material or medium is used to grow Scott's Bacteria? An especially prepared and sterilized sand of very fine texture to which is added water and various nutrients and other substances.

24. Why is water added? It is necessary for the life of the bacteria and their reproduction.

25. What is the advantage of sand over gelatin and dry cultures? It absorbs the poisons given off by the bacteria which in other types of cultures accumulate and destroy the legume bacteria.

26. How long will Scott's Bacteria remain good? There is no question but that the culture is efficient during the entire season for which it is made. It is good for two years.

27. Does the sunlight injure these bacteria? Just how injurious the sunlight is to these bacteria while being used has not been determined, but we know that the sunlight dries things rather quickly. The bacteria like green plants, must not get too dry, therefore it is advisable to protect them as much as possible.

28. Are there bacteria other than the legume bacteria which make available plant nutrients? Yes, there are a great host of bacteria and fungi which are constantly making soluble various materials which are in the soil.

29. Why not then use culture of other bacteria? Because these bacteria are already found in all soils, and a few more would not make any difference, especially is this so when one bacterium under favorable conditions will become two in about thirty minutes.

30. What effect does lime have on the legume bacteria? The legume bacteria respond to the same lime relations as does the host plant. The bacteria from alfalfa requiring more lime in the soil than those from the clovers.

31. When is inoculation needed? The only way one can learn with certainty, whether inoculation is needed or not is to grow the crop on the field. If the root nodules do not develop at all or only a very few isolated ones are found, the crop needs inoculation.

32. Is inoculation always successful? Occasionally it does not produce good results. There are some soils in which bacteria will not live. Sometimes the plant will not grow in the soil. In such cases the fault of the soil must be corrected before results can be expected from the sand cultures.

33. Why are Scott's Bacteria superior to others? They contain more bacteria, they retain life for a longer period of time, and are more economical to use.

34. Are they expensive? Not at all. The price is \$1.00 per package, postage paid.

35. Why more economical than others? Because for all small seeded legumes one culture suffices for 30 lbs. of seed, while for large seeds like soy beans one culture is sufficient for 60 pounds of seed. In the latter case, if soy beans are planted with corn, one culture is enough for 6 acres, and the cost for inoculation is then less than 17 cents per acre. It is easiest to use.

36. Directions for using. Pour seed on clean floor or in a tub. Pour contents of can into a clean vessel of about one quart capacity, add one can of water for clovers or vetch (two cans for beans or peas) and stir thoroughly. Then sprinkle the whole over seed and stir with hand or rake until each seed is slightly moistened. The bacteria will adhere to the seed. When the seed is dry sow in the usual way.

TO DEALERS: We will supply without charge, extra copies of this chart. There is a constantly growing demand for Bacteria, and of course, it pays best to sell one that is guaranteed. Ask us for prices.

